

A NEW GENUS OF BRACHYPTEROUS LEAFHOPPERS  
(HEMIPTERA: CICADELLIDAE: CICADELLINAE: PROCONIINI)  
FROM COSTA RICA

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*Abstract.*—A new genus, *Brevimetopia*, and two new species, *B. silenciosa* and *B. chusquea*, are described from high altitudes in Costa Rica. These species are the first brachypterous leafhoppers recorded from Central America.

*Key Words:* Proconiini, Cicadellinae, leafhopper, taxonomy, bamboo, Chusquea, Central America, Neotropics

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Brachyptery is relatively uncommon in leafhoppers, and in the New World most records are from the Nearctic Region. Some Nearctic genera of Errhomenini (Cicadellinae) have species with brachypterous females and macropterous males (Oman and Musgrave 1975, Oman 1987). In Dorycephalini, some species of *Attenuipyga* have brachypterous females and polymorphic males (with both macropterous and brachypterous individuals). In the same tribe, females of *Neoslossonia* are normally brachypterous (Oman 1985). In *Lonatura* (Deltocephalinae), macropterous individuals of both sexes are rare (Kramer 1967). In the Neotropical Region, brachyptery in Cicadellidae has been reported in four genera. Among Deltocephalinae, brachyptery occurs in both sexes of *Faltala brachyptera* Oman and in females (male unknown) of *Amplicephalus papillosus* Linnavuori (1959); both records are from Argentina. Among Proconiini, brachyptery has been reported in *Lojata ohausi* (Schmidt), which is known only from the female holotype from Ecuador, *Splonia brevis* (Walker) from Venezuela, and *S. nasti* Young from Ecuador (Young 1968).

In this paper, I describe *Brevimetopia*, a new genus of brachypterous leafhoppers from Costa Rica, based on two new species, *B. silenciosa* and *B. chusquea*. The new genus is in the tribe Proconiini (Cicadellinae) and is most similar to *Quichira* Young. The two species described here, which represent the first records of brachypterous leafhoppers from Central America, appear to be associated with bamboos in the Talamanca mountain range, which extended from Costa Rica to western Panama, although there are currently no records from the latter country.

#### MATERIAL AND METHODS

The details of preparations of genital structures of leafhoppers for dissections and study were given by Oman (1949). I have followed his method with some modifications. Abdomens were removed and placed in 10% potassium hydroxide overnight at room temperature. The following day individual abdomens were washed in water before examination and eventual preservation in glycerin in microvials.

Specimens are deposited in the following collections:

- CAS: California Academy of Sciences, San Francisco, USA.  
 INBio: Instituto Nacional de Biodiversidad, Santo Domingo, Heredia, Costa Rica.  
 INHS: Illinois Natural History Survey, Urbana, USA.  
 NHM: The Natural History Museum, London, UK.  
 UCR: University of Costa Rica, San Pedro, San José, Costa Rica.  
 USNM: National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA.

***Brevimetopia* Godoy, new genus**

Type species: *Brevimetopia silenciosa*, n. sp.

Description.—Length: Male 12.0–14.8 mm, female 13.5–15.0 mm. *Head*: Moderately produced, moderately rounded apically in dorsal aspect, median length of crown less than half interocular width and more than one-third transocular width, anterior margin with slight depression between crown and face, ocelli small and located anterad of line connecting anterior eye angles, each slightly closer to median line than to adjacent eye angle, surface of crown concave except for indistinct M-shaped elevation bordering posterior margin, pubescence indistinct; antennal ledges with longitudinal fovea, anterior margins oblique; clypeus flattened medially, strongly convex laterally, texture of dorsomedian area coarsely rugose, muscle impressions distinct; transclypeal suture obsolete; face pubescent, more so below; clypellus with contour continuous with profile of clypeus (Fig. 13).

*Thorax*: Pronotal width less than transocular width of head, lateral margins divergent anteriorly, disc rugose and punctate; pleura pubescent, mesepimeron inflated as a fleshy lobe (Fig. 12); anterior portion of scutellum pubescent, inflated in the posterior portion (Fig. 13); metepimeron with shelllike projection. Forewing bra-

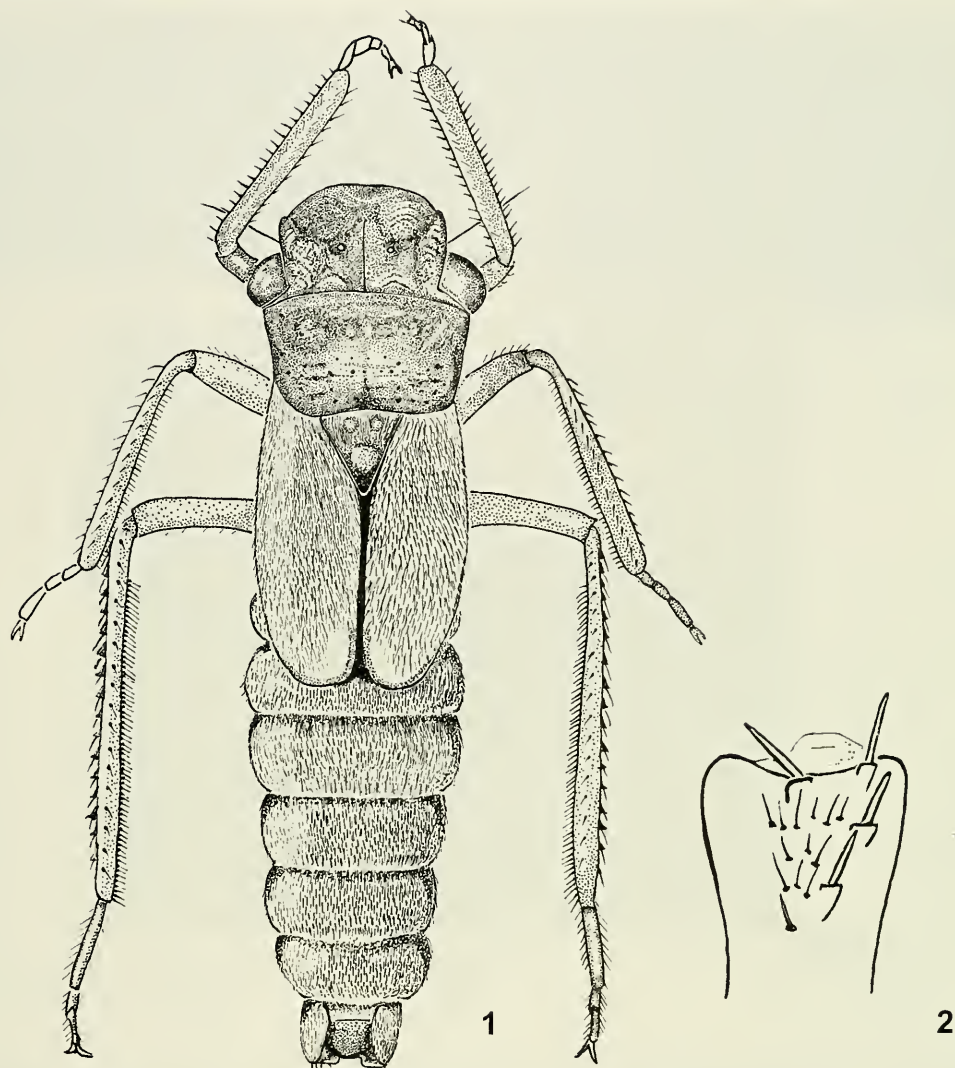
chypterous, exposing at least terga VI–IX, with membrane including only reduced apical cells, venation absent or nearly absent, texture strongly coriaceous, heavily or finely pubescent; hind wing brachypterous, same length as forewing; hind legs at rest with knees attaining or nearly attaining posterior proepimeral margins, femoral setal formula 2:1:1, 2:1:0, or 2:0:0, tarsomere I of hind leg with length nearly equal to combined length of II and III tarsomeres.

*Male genitalia*: Pygofer not strongly produced, with numerous evenly dispersed microsetae over most of surface, in lateral view with caudal margin obliquely truncate, with recurved posteroventral process (Figs. 3–4). Plates separate throughout their length, not extending as far posteriorly as apex of pygofer, each triangular, with numerous evenly dispersed microsetae (Fig. 5). Style posteriorly extending beyond apex of connective. Connective Y-shaped with arms widely divergent, stem keeled (Fig. 6). Aedeagus symmetrical, in caudoventral view with preatrium long, shaft short, truncate apically, with long paired medial processes, in lateral view extending distally beyond aedeagal shaft (Figs. 7–8). Paraphyses absent.

*Female*: Ovipositor not extending beyond pygofer apex. First and second valvulae elongate, slightly wider subapically, tapered to apex; first valvulae with sculptured area striate. Second valvulae with dorsal teeth, individual teeth emarginate, slightly elevated.

Etymology.—The generic name is formed by adding the Latin *brevis* (in its of short) and the Greek *metron* (in its of measure), in reference to the short wings. Gender: feminine.

Remarks.—*Brevimetopia* is known only from high altitudes in Costa Rica and, with the exception of one specimen, the genus has only been collected in the Talamanca mountain range. The male genitalia are similar to those of *Quichira* Young, but the latter has a more truncate head (in dorsal view) and the transition from the crown to



Figs. 1-2. *Brevimetopia silenciosa*. 1. Male dorsal view. 2. Apex of left hind femur.

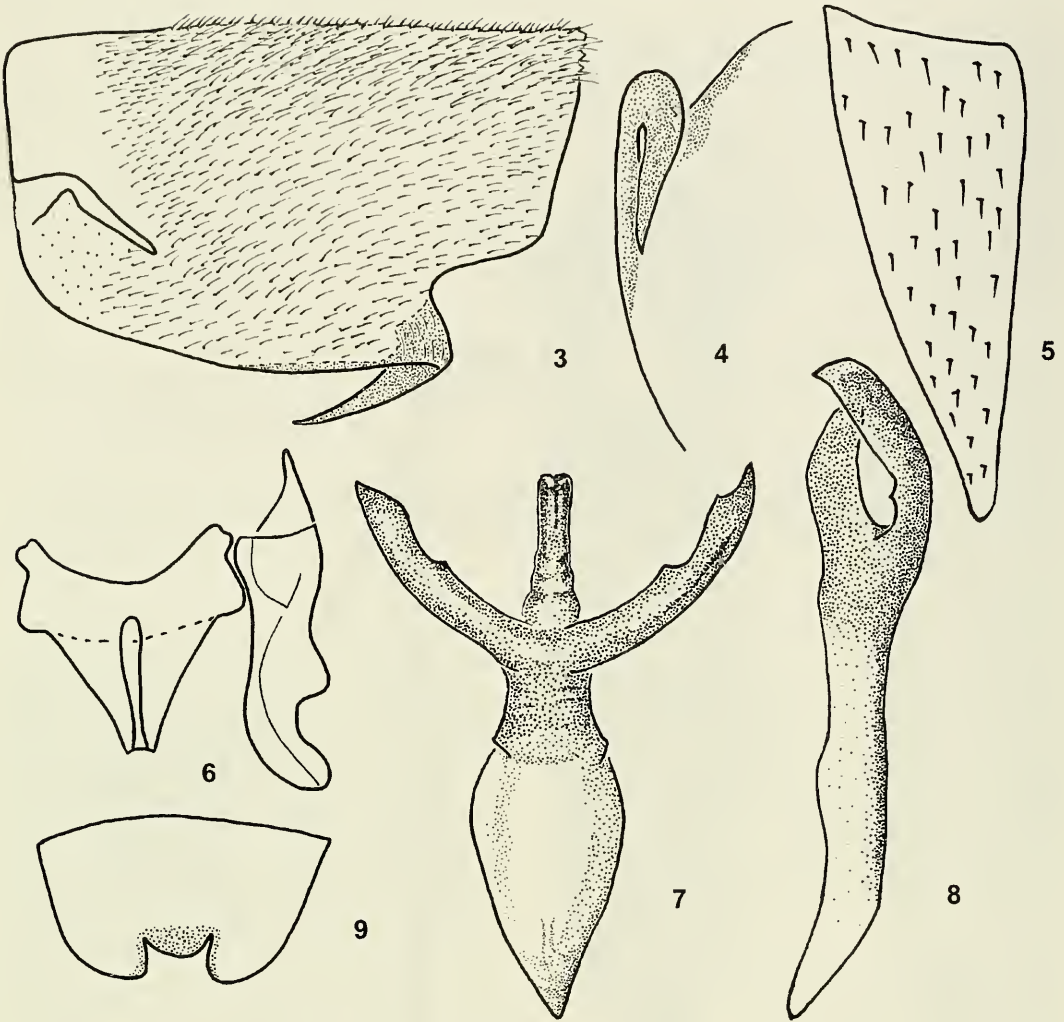
the face is more angulate. *Brevimetopia* has the anterior margin of the head rounded in dorsal view, much more body pubescence, brachypterous wings, inflated mesepimeron, and longer hind legs with knees attaining the posterior margin of the proepimeron. The unusually long hind legs, distinguishing character of *Brevimetopia* are clearly associated with brachyptery; among other Proconiini, this character is found only in *Splonia* (Young 1968).

In Young's (1968) key to the genera of Proconiini, *Brevimetopia* would come out

in the first couplet, with the other brachypterous genus, *Lojata*. *Brevimetopia* can be distinguished by its more rounded head, without a distinct carinae between the crown and face (in *Lojata* the head is prolonged and obtusely angulate in dorsal view), as well as the lack of a pair of rounded elevations bordering the posterior margin of the pronotal disc.

#### KEY TO *BREVIMETOPIA* SPECIES

1. Body color mostly mustard yellow. Forewing densely pubescent (Fig. 1) . . . . . *B. silenciosa*



Figs. 3-9. *Brevimetopia silenciosa*. 3, Male pygofer. 4, Male pygofer lateral view. 5, One male plate, ventral view. 6, One style and connective, dorsal view. 7, Aedeagus, caudoventral view. 8, Aedeagus lateral view. 9, Female abdominal sternum VII.

- Body black and orange. Forewing sparsely pubescent ..... 2
- 2. Forewing black with two orange spots (Fig. 10) ..... *B. chusquea*, ♂
- Forewing orange (Fig. 12) ..... *B. chusquea*, ♀

***Brevimetopia silenciosa* Godoy,  
new species**  
(Figs. 1-9)

Description.—Structural characters as in generic description. Length: Male 14.8 mm, female 14.8-15.0 mm. Color of dorsum mustard yellow except head, pronotum,

posterior scutellum, face, and legs, red brown. All parts except head, pronotum, and legs densely covered with mustard yellow setae (Fig. 1).

*Thorax:* Forewing brachypterous, exposing at least terga VI-IX. Hind legs at rest with knees attaining posterior proepimeral margins, femoral setal formula 2:1:1 (Fig. 2).

*Male genitalia:* Aedeagus, with paired medial processes in lateral view extending distally beyond aedeagal shaft, each with small toothlike projection (Figs. 7-8).



Figs. 10–12. *Brevimetopia chusquea*. 10, Male dorsal view. 11, Female lateral view. 12, Female dorsal view, arrow indicates lobelike mesepimeron.

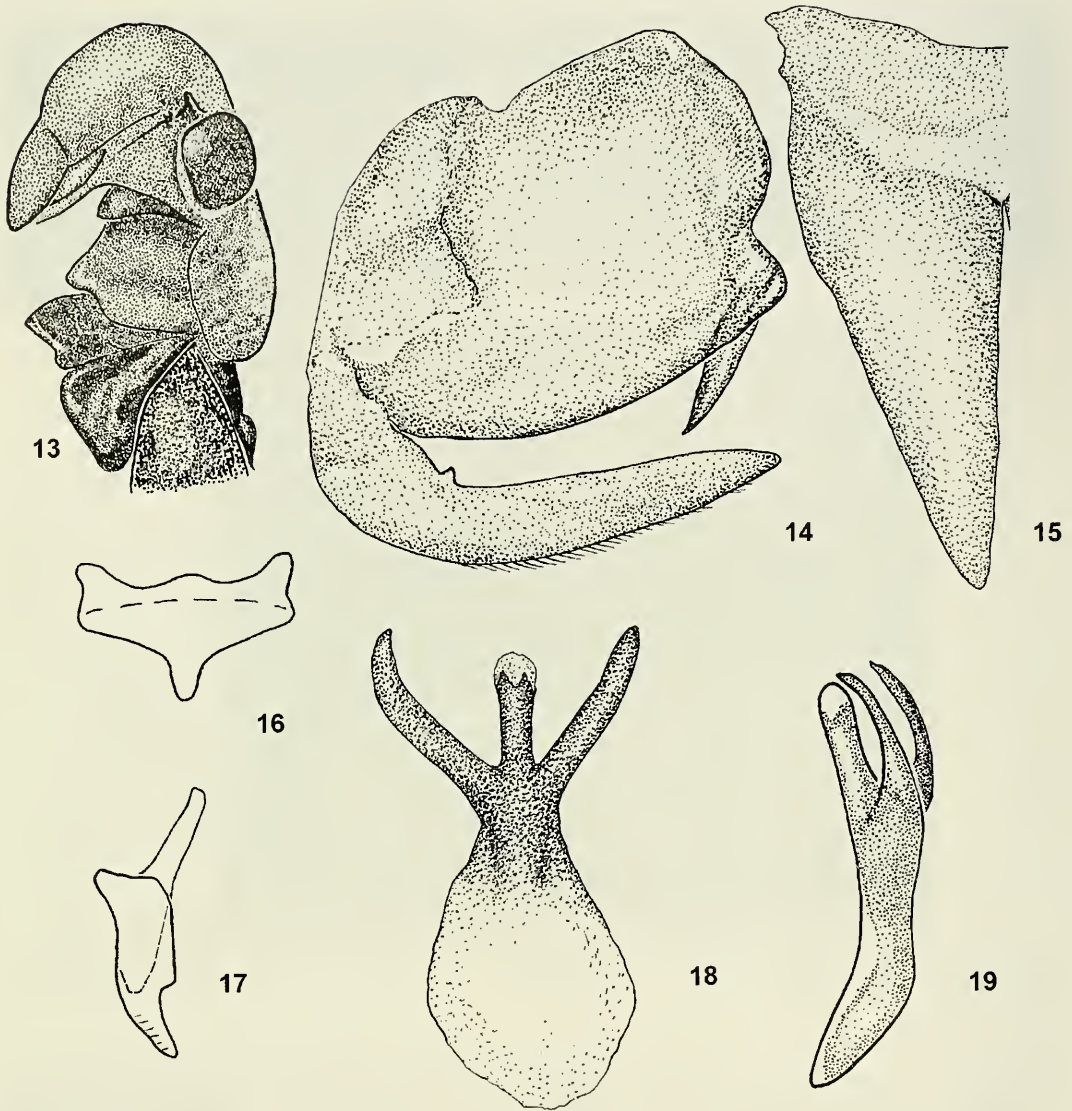
*Female*: Abdominal sternum VII broadly sinuate, with blunt medially produced lobe (Fig. 9). Ovipositor as in *B. chusquea*.

*Type material*.—Holotype ♂, COSTA RICA, Puntarenas, Buenos Aires, PILA-ACLA Est. Altamira, Sendero Valle del Silencio al Jardín, 2,400 m. 18.iv.1995 (INBio). L. Angulo, L-S 342300-577200. Paratypes: 3 ♀, same data; 2 ♂, Limón, Valle del Silencio, 2,420 m; 3–6.vi.1996. R. Villalobos, L-S 342200-577400 (INBio). 1 ♂, Limón P. Int. La Amistad, Send. Circular, 2,450 m. 22.vi.-4vii.2003. R. González, LS 340258-577465; 1 ♀, same data, 27.ix.2003; 1 ♂, same data 20–22.ix.2003;

1 ♂, Limón P. Int. La Amistad, Valle del Silencio, Sendero al Jardín Natural, 2,400 m. 30.x.2203, D. Rubí, LS 3412908-577409.

*Etymology*.—The specific name refers to the type locality.

*Remarks*.—*Brevimetopia silenciosa* is similar to *B. chusquea*, but the former is more pubescent differs in coloration, has the mesepimeron more inflated, and the basal processes of the aedeagus have toothlike projections. This species is known only from the Talamanca mountain range. The host plant is *Chusquea patens* L. G. Clark (R. Rakitov, personal communication).



Figs. 13–19. *Brevimetopia chusquea*. 13, Male head and thorax, lateral view. 14, Male pygofer, setae not shown. 15, One male plate, ventral view, setae not shown. 16, One style, dorsal view. 17, Connective, dorsal view. 18, Aedeagus, caudoventral view. 19, Aedeagus, lateral view.

***Brevimetopia chusquea* Godoy,  
new species  
(Figs. 10–22)**

Description.—Length: Structural characters as in generic description. Male, 12 mm, female 12.9–13.5 mm. Male. Color of dorsum of head, pronotum, posterior scutellum, face and legs black; forewing black with large orange spot in the brachial cell

and distal area of wing, hind wing dark (Fig. 10). Female. Color of head orange red, coronal suture black, pronotum orange red, scutellum orange brown, anterior clypeus orange red and posteriorly black, clypellus black; legs orange, tarsus black brown; forewing orange red, discal cell with orange spots, apical portion orange, hind wing dark, abdomen brown red (Figs. 11–12).



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Fig. 20–22. *Brevimetopia chusquea*. 20, Female genitalia (abdominal sternum VII, pygofer, ovipositor). 21, First valvula of ovipositor (emargination on ventral margin is the result of damage). 22, Second valvula of ovipositor.

*Thorax*: As in generic description. Forewing very finely pubescent, rugose and punctate. Hind legs at rest with knees almost reaching proepimeron, setal formula of male 2:0:0 and 2:1:0 in female.

*Male genitalia*: Aedeagus, without toothlike medial processes.

*Female*: Abdominal sternum VII pale, broadly sinuate with elevated truncate median lobe shiny black (Fig. 20). First valvula of ovipositor of uniform width except for short attenuated apex (Fig. 21). Second valvulae somewhat blade-shaped width roughly uniform for entire length, laterally compressed, with apex less curved than arcuate base. Apical portion narrowed and dorsal convex with truncate apex. Texture moderately to lightly sclerotized, ventral hyaline area almost transparent. Dorsal teeth of valvulae broad and rounded (Fig. 22). Third valvulae without setae.

Type material.—Holotype: ♂, COSTA RICA, San José, Cerro de la Muerte, 19 km S 3W Empalme, Mirador Quetzal, 2,600 m, xii.1999. Hanson & Godoy (UCR) (INBio). Paratypes: 1 ♂, San José, Pavas, 1,100 m, 20.ix.1981. A. Simons; 1 ♂ same data except vi. 2000 (CAS). 1 ♀, Cartago-San José, 20 km. SE Empalme, 2,800 m.

V.1988. I. Gauld (INBio); 1 ♀, San José, Mirador de Quetzales, 2,600 m, on *Chusquea tonduzii*, 28.VI.2003, A. Hicks (USNM); 1 ♀, same data, R. Rakitov (INHS)].

*Etmology*.—The specific name refers to the host plant.

*Remarks*.—*Brevimetopia chusquea* is similar to *B. silenciosa*, but the former differs in coloration, is less pubescent, has a setal formula of 2:0:0, and the basal processes of the aedeagus lacks toothlike projections. Moreover, in *B. chusquea* the pygofer is more rounded apically, the style has a smaller preapical lobe and narrower apophysis, and the connective stem is shorter and more slender than in *B. silenciosa*. The host plant appears to be the bamboo, *Chusquea tonduzii* Hackel (Poaceae). The two females collected in 2003 were placed in transparent plastic cages with plant cuttings and were observed laying clusters of eggs under the lower epidermis of bamboo leaves (R. Rakitov, personal communication). The Pavas (1,100 m) locality for one of the specimens is exceptional in that it is the only record of the genus outside the Talamanca mountain range.

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